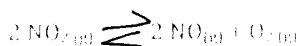
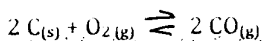


stay the same

15. List three ways that the following equilibrium reaction could be forced to shift to the right.



*Increase Temp.
Increase NO_2
Increase Volume
Remove NO or O_2*



What will be the effect of the following disturbances to the system:

a. adding CO (at constant volume and temperature)

←

b. addition of O_2 (at constant volume and temperature)

→

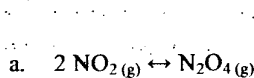
c. addition of solid carbon (at constant temperature)

No change

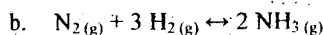
d. decreasing the volume of the container

←

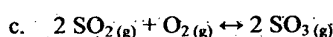
17. Write equilibrium expressions for the following reversible reactions:



$K = \frac{[\text{N}_2\text{O}_4]}{[\text{NO}_2]^2}$



$K = \frac{[\text{NH}_3]^2}{[\text{N}_2][\text{H}_2]^3}$



$K = \frac{[\text{SO}_3]^2}{[\text{SO}_2]^2[\text{O}_2]}$

18. For the equilibrium system described by $2 \text{SO}_{2(g)} + \text{O}_{2(g)} \rightleftharpoons 2 \text{SO}_{3(g)}$

at a particular temperature the equilibrium concentrations of SO_2 , O_2 and SO_3 were 0.75 M, 0.30 M, and 0.15 M, respectively. At the temperature of the equilibrium mixture, calculate the equilibrium constant, K_{eq} , for the reaction.

$K = \frac{[0.15]^2}{[0.75]^2[0.30]}$
 $K = 0.13$

19. For the equilibrium system described by: $\text{PCl}_{5(g)} \rightleftharpoons \text{PCl}_{3(g)} + \text{Cl}_{2(g)}$

K_{eq} equals 35 at 487°C. If the concentrations of the PCl_5 and PCl_3 are 0.015 M and 0.78 M, respectively, what is the concentration of the Cl_2 ?

$K = \frac{[0.78\text{M}][\text{Cl}_2]}{[0.015\text{M}]}$

$\frac{[0.015]}{[0.78]} \times 35 = 0.67\text{M} = \text{Cl}_2$